Pv system meaning

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Hassan Farhat has a background in Energy Engineering and excelled in his Master of Science in Renewable Energy in Electrical Systems. More than three years ago, he joined the RatedPower technical team, where he works as a Solar Photovoltaic Engineer and Customer Success Manager at RatedPower.

Hassan has a thorough understanding of the industry and of RatedPower’s pvDesign, the digital solution to reduce LCOE and maximize productivity of utility-scale PV plants. He"s passionate for renewable energies and their role within the global environmental transition.

Here at RatedPower, solar photovoltaic system design is our bread and butter. However, we know this technology can be difficult to understand as it"s constantly evolving and driven by complex mechanisms.

Photovoltaic, derived from the Greek words for light and energy, phos and volt, refers to the conversion of light directly into electricity. Literally translated, it means "light energy."

Solar technology has a long history, longer than you might think. In fact, the first recorded mention of solar technology was back in 1767 when Swiss scientist Horace-Benedict de Saussure designed what he called a "solar collector cell."

These solar collector cells were essentially glorified magnifying glasses, with multiple layers of glass focusing the sun into an insulated box to capture the heat generated. After this, the next and perhaps most significant leap came in 1839.

Young French scientist Edmond Becquerel first observed the photovoltaic effect when experimenting with conductance and illumination. The photovoltaic effect is the process by which sunlight is converted into electricity, although it would be a number of years from this first observation until the process was understood and described for the first time.

A number of scientists made contributions to the field during the rest of the 1800s, with the photovoltaic effect being observed in selenium which later led to the construction of the first selenium solar cell in 1877. At this time, scientists knew that the photovoltaic effect worked but no one knew how.

The theory behind the photovoltaic effect was first described by a familiar name, Albert Einstein. In his 1905 paper, Einstein described what he termed the "photoelectric effect," laying out the photovoltaic effect in detail for the first time. This discovery would go on to net him the Nobel Prize in physics in 1922.

The first practical solar cell was developed in 1954 by scientists at the Bell Laboratory. With this first boundary crossed, the US government began pouring substantial funding into solar PV research with the hopes

of creating viable solar panels to be used on orbiting satellites.

With the increased time and resources being dedicated to research and development, solar PV technology came on leaps and bounds in the following decades, including becoming the universal source of power for space operations.

In 1990, researchers in Australia reported a crystalline silicon solar cell with an efficiency of 25%. This represented over 80% of the theoretical maximum of such cells that had previously been established. This breakthrough was swiftly followed in 1999 by the total installed capacity of solar cells exceeding 1000 MW.

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